REMARKS

The rejections of Claims 9-26 under 35 U.S.C. § 103(a) as unpatentable over U.S. 4,428,775 (Johnson et al) or U.S. 6,777,103 (Merkley et al), are respectfully traversed.

The present invention is a flat panel obtained by the Hatschek process, without autoclaving from a sheet material obtained by filtration of an aqueous suspension, which contains, *inter alia,* a Portland cement in an amount of from 20 to 50% by weight, and calcium carbonate in an amount of from 40 to 65% by weight, each of dry matter.[1]

As described in the specification at page 6, line 38 through page 7, line 7, good results in terms of dimensional stability and mechanical properties are obtained, independently of the presence or not of a pozzolan, when cement and calcium carbonate are combined in a relatively limited amount and a relatively high amount, respectively. A flat panel, unlike non-flat panels, requires limiting possible shrinkage as much as possible while maintaining satisfactory mechanical properties.

Johnson et al discloses a fiber-cement product capable of being formed on a Hatschek machine comprising, in its broadest form, 40-80% of Portland cement binder, 1-15% of fibers, 2-15% of clay, and 0.03-0.5% of poly(ethylene oxide) homopolymer (column 2, lines 3-10). The product may also contain silica and/or filler in an amount of between 10 and 40% (column 2, lines 11-13). Johnson et al discloses further that their product is autoclaved or not autoclaved; that silica is added by itself or in combination with filler if autoclaved (column 2, lines 49-50); and that if there is to be no autoclaving, reground product and/or inert filler, such as calcium carbonate or wollastonite, can be substituted for the silica (column 10, lines 16-18). Johnson et al prefer a Portland cement content of 45-75%, most preferably 55-65% **when silica and/or filler is used** (column 2, lines 57-61; emphasis added). The amount of silica and/or filler is preferably 15-35%, and most preferably 20-35% (column 3, lines 1-5).

[1] All percentages discussed in the text are by weight.

Of the 17 examples of Johnson et al, two were prepared on a Hatschek machine (Examples 1 and 9); the remainder were laboratory-prepared samples. Autoclaving was carried out in Example 1. Example 9 was carried out by normal cure. Thus, Example 9 is the only example prepared on a Hatschek machine and not autoclaved. In this Example, as well as all the other Examples, the amount of cement was greater than the presently-recited maximum of 50%, and the amount of filler was less than the presently-recited 40% minimum for calcium carbonate. In addition, none of these Examples contains calcium carbonate. In those that contain wollastonite (Examples 9 and 15-17), its amount was substantially less than the 40% minimum for calcium carbonate of the above-amended claims. In addition, wollastonite is relatively high in cost, compared to calcium carbonate. Thus, the use of the relatively greater amount of calcium carbonate and relatively smaller amount of cement, ultimately combine to produce a flat panel at a relatively reduced cost.

Johnson et al teaches away from the present invention, in view of the above-discussed disclosure that the amount of cement should be 55-65% by weight when silica and/or filler is used. Nevertheless, the newly-submitted Famy Declaration demonstrates the significance of the presently-recited amount minimum of 40% for calcium carbonate. In the Declaration, three slabs made by the Hatsheck process, labeled Slabs A, B, and C, containing 20%, 40%, and 60%, respectively, calcium carbonate in the form of limestone, were prepared, with their compositions shown in Table 1 therein. The declaration shows the effect of limestone content on degree of hydration and shrinkage stability. The Famy Declaration states:

> The increase of the limestone content of the slabs from 20 to 40% does not change the shrinkage value (0.31 and 0.29%). On the other hand, when the level of limestone increases from 40 to 60%, the shrinkage decreases from 0.29 to 0.18%. It also is observed that the loss of resistance to bending (or MOR) is significant when the limestone content increases from 20 to 40%. The slabs containing 60% limestone show resistances similar to those containing 40% of same.
>
> The NMR ^{29}Si is used in order to make it possible to better understand the effect of the limestone content on the degree of hydration of the cement and the structure of the hydrates (C-S-H) formed. Table 2 presents the results. It is clearly demonstrated that the addition of limestone from 20 to 40% increases the level of hydration of the cement from

69% to 88%. This effect is explained by the increase in nucleation sites due to the presence of fine grains of limestone. The cement is activated by the limestone. The C-S-H formed in slab B are also more polymerized (longer C-S-H chain length or $I(Q^2)$) than those formed in the slab containing 20% limestone. This is in keeping with a higher level of hydration.

When the limestone content increases from 40 to 60%, the hydration level remains constant (88 and 87% respectively). Thus there is a plateau effect of limestone content on hydration level.

Knowing the quantity of anhydrous cement contained in the slabs, it is possible to determine the quantity of C-S-H formed in each slab (Table 2). A similar quantity is present in slabs A and B (51.5 and 48.1 respectively), despite a different hydration level of the cement (69 and 88%). A lesser quantity of C-S-H is present in slab C (30.2%).

Shrinkage stability, observed in slabs A and B (Table l, 0.31 and 0.29%), is explained by a like quantity of C-S-H in these two slabs - the C-S-H being the majority compound sensitive to moisture fluctuations (shrinkage and expansion). By significantly reducing the quantity of C-S-H, the shrinkage is reduced, as is seen in slab C.

On the other hand, the preservation of resistances when the limestone content increases from 40 to 60% is provided by the microstructure of the slabs. Despite a lesser quantity of hydrates or C-S-H in slab C, because of a better spatial distribution of the hydrates and the porosity, resistance does not decline. A microstructure in which the hydrates form homogeneously in the space initially occupied by water (the outer C-S-H), filling in the micro- and nanometric pores, offers mechanical properties superior to a microstructure favoring hydrates around grains of cement (inner C-S-H).

Table 2: % of hydration and quantity of hydrated cement in the slabs A, B and C. $\%I(Q^2)$ is the quantity of silica tetrahedrons surrounded with two silica tetrahedrons.

	% Hydration	$I(Q^2)\%$	% OPC slabs	% hydrated OPC in slabs
A	69	33	74.7	51.5
B	88	54	54.7	48.1
C	87	57	34.7	30.2

The above-discussed comparative results could not have been predicted from Johnson et al.

Merkley et al discloses a fiber cement composite material comprising a cementitious matrix and biocide-treated cellulose fibers incorporated therein (column 4, lines 11-25), wherein the cementitious binder is preferably Portland cement (column 8, line 55). Merkley et al discloses further that an aggregate, usually silica, which may be fine ground if an autoclave process is used, may be included (column 5, lines 18-20). Merkley et al prefers a composition containing, *inter alia*, 10-80% cementitious binder, 20-80% silica (aggregates),

and about 0-10% of additives (column 9, line 43-53). Among the aggregate materials other than silica listed by Merkley et al (column 8, lines 58-65), calcium carbonate is not included.

As calcium carbonate is not disclosed for any embodiment, Merkley et al does not even present a *prima facie* case of obviousness. Nevertheless, even if such a case were made out, the above-discussed Famy Declaration would overcome it.

For all the above reasons, it is respectfully requested that the rejections over prior art be withdrawn.

The rejection of Claims 15-20 under 35 U.S.C. § 112 and 132, as containing new matter, is respectfully traversed. The Examiner appears to find that because the recited amounts of calcium carbonate are supported by Examples 1 and 2, respectively, which use Portland cement, the amount of cement in the corresponding claims must be the specific amount in these examples, and the cement must be Portland cement. In reply, the issue is whether Applicants had possession as of the filing date of an invention wherein the amount of calcium carbonate was either 40% or 60% using any cement. There can be no question that they did, since Applicants describe an amount of calcium carbonate of 35-65%, advantageously from 38 to 62% (page 7, lines 17-19), without any limitation that specific amounts within this range are "tied" to specific amounts of cement. Nor is there any described limitation that any composition containing 40 or 60% calcium carbonate must have specific amounts of cement. Similarly, the cement is described as "in general Portland cement" (page 4, lines 25-26), and thus it is not required that the cement be Portland cement.

Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 9-26 under 35 U.S.C. § 112, first paragraph, as non-enabling, is respectfully traversed. Indeed, the rejection is now moot in view of the above-discussed amendment. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 9-26 under 35 U.S.C. § 112, second paragraph, is respectfully traversed. Regarding the term "capable of" in Claim 9, this term references the property of the recited material. Since Applicants are claiming a product in this claim and not a process, it is perfectly acceptable to define a material by its property, which is the capability of undergoing a pozzolanic reaction. Regarding Claim 26, the term flat panel is deemed to be a genus containing the species of siding, cladding element, and partition element. The Examiner's suggestion to insert a statement of intended use would, in effect, not add a further limitation to Claim 9, the claim from which Claim 26 depends. The remaining grounds of rejection would appear to be moot.

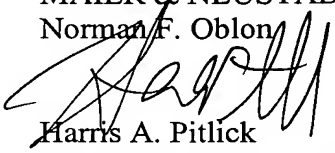
For all the above reasons, it is respectfully requested that this rejection be withdrawn.

Applicants call the Examiner's attention to the footnote at page 9 of the amendment filed February 28, 2005, to wit, "The Examiner identified Suzuki et al as U.S. 6,139,620, but this reference was not made of record. The Examiner is respectfully requested to make it of record in the next Office communication." While Suzuki et al has been withdrawn, nevertheless, it was once applied and thus should be made part of the record.

All of the presently-pending claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Harris A. Pitlick
Registration No. 38,779

Customer Number
22850
Tel: (703) 413-3000
Fax: (703) 413-2220
(OSMMN 08/03)

NFO:HAP\la